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EDITED BY
GEORGE E. ROBERTS

AMERICAN CHAMBER OF ECONOMICS
INCORPORATED
NEW YORK

READING TEXT IV—ECONOMICS FOR EXECUTIVES

RAILROAD TRANSPORTATION

EDITED BY

GEORGE E. ROBERTS

AMERICAN CHAMBER OF ECONOMICS
INCORPORATED
NEW YORK

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RAILROAD TRANSPORTATION

I

Transportation as Production

JUST why, in a survey of present-day productive agencies, we should next consider railroad transportation may not at once be clear to the business man. He usually thinks of production as growing, extracting, or manufacturing something. In ordinary discussion the mere handling or movement of things is not treated as production.

The economist, however, defines production as the *doing or making of anything which human beings desire.* Under this definition, it requires no stretch of the imagination to see that to transport a product from one section of the country where it may not be needed, to another section where it is wanted, is just as useful and productive a service as though the product had actually been grown or extracted or manufactured

NOTE: Events in the field of railroad transportation are shifting so rapidly that it was decided to include in the present study-unit only those events that had transpired to January 1, 1921. Succeeding developments are covered in a supplement.

at the point where it is desired. In this economic sense, therefore, transportation is entitled to rank with manufacturing, agriculture, or mining as a productive agency.

Of course, the service of transportation is not restricted to the railroads. Water transportation, especially over seas, is of vital importance. And the motor truck and automobile now are transportation agencies in common use. A complete consideration of transportation would include these, and also the interurban and electric railroads, aëroplanes, pack animals, human shoulders, and all other agencies that help move men or products from one place to another.

It is obvious that it is impossible to treat exhaustively of all of these in brief compass. Neither are all of like significance nor do all involve problems of like extent and importance. For these reasons, in the present studies, we shall confine our consideration purely to the railroads.

II

Transportation a Basic Industry

The dependence of modern society upon railroad transportation has been indelibly impressed upon every man or woman who has been active in business during the past few years. The delays and interruptions to the free flow of goods and raw materials, the embargoes placed upon the movement of cars, the failure to furnish cars when called for, and the resulting inconvenience, loss, and shortage, have all conclusively demonstrated the vital importance of an efficient transportation system.

But, although there is general recognition of the necessity for adequate transportation service, a clear understanding of the requisite conditions of good service and of the difficulties which the railroads face from the political and economic standpoints is not so general. The railroad problem has been becoming increasingly difficult for some years and now has become critical. It is a problem of many complications, affecting all interests, calling for patient examination and sober, unprejudiced judgment. The public is intensely interested, and popular opinion doubtless will determine the policies to be pursued. Business men know by direct experience the evils that result from delinquencies and abuses in transportation service, and they should take an active part in helping to settle the issues in controversy.

On account of the great importance of the subject two study-units will be devoted to the railroad question. The first will consider the economic characteristics of the railroads, give an historical review of their development, and discuss their capitalization and present financial situation. The second will discuss the subject of railroad regulation in its various aspects, with particular reference to the problems facing the railroads upon their return to their owners after the war.

Our Dependence upon Transportation

A consideration of what would happen to a city like New York, were its communications suddenly and completely cut off from the rest of the world, makes clear the modern dependence upon the railroads. Within the area of its charter limits it produces almost nothing in the form of food and raw materials. Aside from the products of market gardens and of the river and sea, it draws everything it needs from the outside. It produces no coal, no meat, no grain, almost no milk, no wool or cotton. New York faces every day as critical a situation from the economic standpoint as did England during the submarine period of the war.

An outstanding characteristic of our modern life is our interdependence, whereby one locality, like New York, may specialize upon the production of certain articles or the rendering of certain services, which nature and its location have especially fitted it to provide, and may look to other territories for other products or services vitally necessary to life and organized society. This we call the geographical or territorial division of labor, and to it is attributed much of the productiveness of modern life. Yet without transportation, a territorial division of labor would obviously be impossible. It is transportation that enables us to exchange goods. Without it each locality would have to be self-supporting and independent.

We may summarize, therefore, with the statement that transportation is an agency for promoting geographical division of labor, and its enormous significance is (1) that a highly developed division of labor makes available more commodities to satisfy man's wants and at a reduced cost, and (2) that once the organization of production has been effected upon the basis of the territorial division of labor, the prosperity, if not the very existence, of any community depends upon the continued maintenance of the transportation facilities that made this division of labor possible.

Railroads Should Pay Their Way

Since transportation is but a factor in the territorial division of labor, it follows that no transportation agency can be of economic advantage to a community unless the value of the service performed is equal to the cost of the act of performing it. In other words, and speaking broadly, a transportation agency should pay its own way, and this principle should apply whether the agency is privately operated or publicly operated. Under some conditions, there may be certain phases of transportation in which social gains are thought to offset the economic loss of an unprofitable rate, such, for example, as a low suburban passenger rate to relieve city congestion, or a uniform postal rate for mail delivery over the entire country. Every exception to the rule, however, has the presumption against it. It would seem certain that there is no special consideration that would apply to the great mass of freight rates. Here the service is rendered to individuals, and they alone are able to determine whether or not it is worth what it costs. If it is worth the cost to them, they ought to pay it; and if it is not worth the cost, it should be discontinued.

We begin this discussion, then, with the fundamental assumption that transportation facilities are worth what they cost, and that their cost is not a tax or a burden upon the public. It goes without saying that the cost should be made as low as possible, but it should be clear that adequate transportation service is cheaper and less burdensome than inadequate service. The thousands of business men and farmers over this country, who suffered losses by inadequate railroad service in 1920, know this to be true.

An Indispensable Activity

It is also necessary at the outset to recognize that the railroad business is on a somewhat different basis from other industries, which, although necessary in the aggregate, may not be indispensable as individual establishments. The proprietor of a factory may say that he cannot afford to pay a given freight charge upon his raw material or his finished product, and this may be true in his case. If, however, the railroad, all things considered, cannot afford to render the service for less, the public interest should be with the railroad rather than with the factory, because the railroad is indispensable, while a factory in that particular locality may not be indispensable. Perhaps the factory is located in the wrong place.

It is an insufficient answer to a plea for higher freight rates or passenger fares to say that they impose hardships upon shippers, consumers, or travelers. Even though increased rates may require far-reaching readjustments in prices in different markets, or in the location of industries, or in the movements of traffic, or even in wage rates, such readjustments are presumably not so serious as would be the discontinuance of the transportation service, which is the alternative.

In other words, *transportation is a basic industry*. If transportation costs increase, and certain charges over long distances cannot be borne, trade so affected will have to be circumscribed within lesser distances, as it was before the railroads were built. The remedy should not be sought in transportation service at less than cost, whether furnished by private or public agencies. This is a fundamental truth, an appreciation of which should be firmly established before we can properly take up a consideration of some of the other phases of the problem.

There is some ground for the contention that in the eagerness of the railroads to obtain long-haul traffic too much of such traffic has been developed for the good of the country, the actual cost of moving it being greater than if trade were more circumscribed. Another undesirable result has been the tendency for industry and population to concentrate in large centers, thus producing congestion which is a cause of many of the most perplexing civic and social questions. Although this tendency was greater in the old days of unrestricted railroad competition than it is now, it is still a fair question whether there is not too much long-distance transportation.

III

Economic Characteristics of the Railroads

Railroads possess two economic characteristics in a striking degree:

First: *The plant is enormous,* considered in relation to the business done.

Second (and this is a consequence of the first): The industry is conducted to a large degree upon a principle known as that of *joint cost.*

The Enormous Size of the Plant

The plant which must be provided before a railroad can offer the public its service is enormous, due primarily to the extensive territory which must be covered and the physical difficulties to be overcome. A study of a railroad under construction reveals such items, among others, as surveys, grading, bridges, culverts, tunnels, tracks, stations, yards, terminals, round-houses, signal installations, locomotives, and cars. Practically all these must be provided before a ton of freight or a passenger can be moved.

Another indication of the size of the plant required is found in the relation of earnings to investment. In a manufacturing industry, it is expected that the capital will be turned over within the year, and in many cases the annual gross earnings double or triple the capital. In the railroad industry, on the other hand, gross earnings on the average have been not over 20 per cent of the capital.

This fact, the enormous size of the plant, is fundamental to an explanation of railroad operations and railroad charges. It means that a large proportion of the expenses incurred are quite independent of the business done—they would go on if there were no business at all—and a considerable amount of the expense, while increasing with the increase in business, increases by no means at the same rate. Taxes, rentals, and interest on capital must be paid regardless of the amount of business. Administrative expenses, salaries of staff officers, the pay of station agents and a large organization force, insurance and track maintenance, are not determined by volume of business except to a slight degree. Most of the direct costs of operation, such as fuel and wages, do not increase as rapidly as traffic increases.

The foregoing statements are, of course, subject to one limitation, namely, that the capacity of the plant has not been completely taken up. Once the plant is completely in use and there is no surplus capacity for additional business, the principle is suspended in its operation until the plant has been enlarged. A congested plant, attempting to do more business than it was designed for, may find its costs increasing more rapidly than its earnings, rather than less rapidly.

Law of Increasing Returns Again

It follows, therefore, that, subject to the limitation stated, the railroad industry operates under the same law of *increasing returns,* which we referred to in another study-unit, although this law operates to a far greater degree in transportation than in most lines of manufacturing. As business *increases,* the *cost per unit* of the traffic handled tends to *decrease.* The denser the traffic, therefore, the greater is likely to be the prosperity of the road, provided the plant has the capacity to absorb it, for it costs less per unit to handle the business.

It is this characteristic of railroads which makes of them either princes or paupers, and which frequently puzzles the public. During periods of growing business, a railroad may have extraordinary net earnings, due to the fact that its expenses increase relatively little as traffic grows, and the gross receipts from the new business find their way largely into profit. On the contrary, when business falls off, expenses cannot be reduced proportionately and net earnings are largely reduced.

Therefore, there may be sudden transition from affluence to poverty, depending upon the state of general business and the amount of traffic procurable by the railroads.

The Principle of Joint Cost

The second economic characteristic of railroads, which is largely the result of the first, is that the various railroad services are to a predominant degree the product of a *joint cost.* By this is meant that the cost is an aggregate one for the business as a whole, and that no individual product or service has a complete individual cost of its own, or at least not one that may be stated with any degree of precision.

Passenger service is performed on the same right of way as is freight service, with the same capital investment and the same administrative oversight. To a large degree the costs of the two services are inseparable. Naturally, when passenger costs as a whole cannot be sharply differentiated from freight costs as a whole, to determine the exact cost of handling an individual passenger or an individual unit or article of freight becomes utterly impossible. The same holds true of freight. The cost of hauling a freight train loaded with commodities can be only roughly estimated and the cost of the individual shipment within a car becomes only an approximation.

"What the Traffic Will Bear"

It follows from this characteristic of joint costs, that the price of any specific railroad service cannot be determined by the cost of that service to the railroad. For an individual service, cost is non-determinable; furthermore, as already explained, the costs per unit varies with the amount of business done. Therefore, the rate is determined largely on the principle of the value of the transportation service to the particular commodity carried. In other words, each commodity contributes to the liquidation of the aggregate transportation costs an amount which represents a fair proportion, based upon the value of the service for that commodity. This is often called "charging what the traffic will bear," which is an expressive and unobjectionable term if properly interpreted. It does not mean charging *all* the traffic will bear in the spirit of a greedy monopolist; it means, rather, charging each of the multitude of commodities carried according to the value of the service performed for each. No railroad should carry any commodity or passenger at less than the out-of-pocket expense involved (which can, as we have stated, be determined only as a rough approximation);

no rate should be made so high as to keep traffic from moving, that is, so as to exceed the value of the service. Between these two extremes, rates should be adjusted as nearly as possible so that each commodity contributes its fair share to the aggregate expense involved.

Joint Cost and Freight Classification

In this principle lies the explanation of *freight classification.* Low-grade articles, such as ore, coal, lime, and sand (which are heavy in proportion to value), are charged less per ton-mile than are silks, pianos, and automobiles. The former could not be shipped if rates were high; on the latter, however, the transportation charge has little effect. Accordingly, high-grade goods contribute a larger amount per ton-mile to the aggregate of fixed expenses than do the low-grade goods. The latter contribute all they can above the actual out-of-pocket expense involved in their haul, but not their full proportion of the joint expense.

Beyond the fact that this is the most practicable basis of rate-making, its justification, from the public standpoint, lies in the fact that in this way, and in this way only, can the capital invested be utilized to the greatest possible extent and the public enjoy the maximum of benefits from the railroads. The public's interest consists in getting things moved, and the development of efficiency in transportation has meant an increasing movement of low-grade commodities. Only by permitting these commodities to pay what they could and charging the higher grade commodities enough to cover the balance, has the enormous tonnage movement of this country been possible, and only by the application of these principles has the railroad been able to become the indispensable public servant that it is to-day.

Public Consequences of this Principle

Certain consequences of a public nature follow from the application of this method of rate-making. In the first place, it permits (in the absence of regulation) a high degree of flexibility in rates. The practice of charging what the traffic will bear means applying the principle of expediency to the immediate situation. Competition of a water-route, of another railroad at a long-distance point or an industrial center, leads to a lowering of the rates so that competition can be met and traffic moved, and this shrinking of the rate must be made up by a relatively greater contribution on the part of shipments from noncompetitive points.

A second problem growing out of these fundamental conditions is that of discrimination in the rate charged for transportation over certain distances. It seems reasonable to contend that the charge made for hauling a given commodity should be greater when it is carried over a long distance than when it is transported a shorter distance. The greater distance imposes a greater cost on the carrier. For reasons that will be explained in the next paragraph, however, it was found necessary to incorporate in the Interstate Commerce Act the famous "long and short haul clause," which provides that the railroad must charge no more for shorter than longer distances over the same route and in the same direction without express permission from the Interstate Commerce Commission.[1]

The reference to the granting of express permission in certain cases suggests that there should be considerations under which it might be proper for a carrier to charge more for the short haul than for the long haul, which is actually the case. Thus railroads carrying traffic from the eastern part of the United States to the Pacific Coast might find it necessary to charge a low through-rate in order to meet water competition, since the freight might be taken by vessels through the Panama Canal. However, if rates to all intermediate points were correspondingly reduced, the aggregate receipts of the carrier might be insufficient to meet its expenses. Raising the through-rate would result in a loss of much of its through traffic. Consequently, permission has been granted in certain instances for the carrier to charge a higher rate to intermediate points, as, for example, Spokane.

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[1] This power, granted to the Commission in the original law of 1887, was nullified by Supreme Court decision in 1897, but was restored by amendment to the Act in 1910.

Tendency Toward Competition

Another consequence that may be noted from the economic characteristics of the railroads is that competition tends to become very intense under conditions of freedom. Out of this intensity of competition, and the financial necessities of the carriers, grew most of the abuses which developed in the railroad management in the early years.

The controversies of those early years between the railroads and the public cannot be fairly judged now without understanding that neither side had a complete comprehension of the relations which should exist between the community and common carriers. The evils of unstable rates and discrimination in charges and service, both between localities and individuals, aroused the indignation of the public, and yet so great was the public's fear of monopoly and over-charging that it insisted upon active competition.

Anything in the nature of agreements or understandings between the railroads to maintain an agreed schedule of rates was deemed to be adverse to the public interest. In short, the public followed the inconsistent policy of insisting that the roads should not have fixed and common charges, and at the same time it insisted that the charges should not be so variable as to effect discrimination between persons or communities. These two sets of conditions were irreconcilable and impossible of observance. Competition in charges inevitably means that the charges will be variable, and the particular characteristic of the railroad business already described, that is, the low, comparative cost of handling an increased volume, resulted in great fluctuations in rates.

Causes of Rate Cutting

Assuming that a road had the capacity to handle additional traffic at but slight additional expense, the temptation to cut rates and attract business from a rival route was very great. At times, when traffic was light, a weak line might be in danger of bankruptcy and be prompted to find relief by offering special inducements to shippers who were able to control a large volume of traffic. The granting of rates below the published schedules to large shippers was defended for a long time, even in the courts, as justifiable. It was argued that a shipper who could supply freight in train-load lots, or in very large aggregates during the year, was entitled to lower rates than was an occasional shipper, or one who moved much smaller quantities.

The idea that transportation was a basic industry, rendering an essential service which, like the mail service, should be available to all upon equal terms, developed gradually. It developed as transportation developed and as the fundamental character of the service became appreciated. It came to be seen that the cost of transportation was so vital a factor in business that if one person had an advantage in it, nobody had a chance in competition with him. It was found that these special rates gave such advantage to the large shipper that he soon had the field to himself and by playing one road against the other, became the dictator of the situation. The development of this broader comprehension of railroad service and the whole problem of control of competition will be treated more in detail at another place. Our main purpose here is to note that the fundamental economic characteristics of the railroads tended naturally to make competition between carriers highly intense.

IV

The Development of Transportation

It is quite impossible to grasp the significance of the current situation in respect to the railroads without some understanding of the conditions out of which it has come.

The Early Turnpikes

The first organized attempts in the early United States to develop better transportation facilities took the form, almost wholly, of the chartering of turnpike companies.

The turnpike charters, while differing in details in the different states, usually prescribed the route, the width, and character of the highway, the distance between toll gates, regulations concerning operation and maintenance, and frequently the maximum tolls that could be imposed. Not uncommonly the rate of return was limited and the terms under which the state might purchase the property were prescribed. The basis of the toll was primarily that of cost, measured in terms of wear and tear, although in some instances the principle of "charging what the traffic will bear" made its appearance. For the most part, however, the tolls increased with increase of load or of number of wheels or of daught animals, and diminished with the increased width of tires.

Transportation agencies on these highways were of many kinds, including residents along the route, who provided service intermittently; owners of individual teams, who made trip contracts; and "chartered companies," owning wagons and coaches and operating on regular schedule. These "common carriers" paid tolls to the turnpike companies and included the tolls in their rates charged to shipper and passenger. Most of the business was performed by unincorporated companies, which the public did not attempt to regulate, relying upon competition to protect shipper and traveler.

The Period of Canal Building

As prosperity increased, following the establishment of a national government, and as capital was accumulated, many projects were put forward for the construction of artificial waterways, for the improvement of natural watercourses, and for the combination of water and highway to form through routes of travel. In order to accomplish these results public aid was besought from both state and federal governments.

With the utilization and improvement of natural waterways came the construction of canals to connect the waterways or to make the water facilities available to a larger territory. The active period of canal building came in the second quarter of the nineteenth century. Other than the Erie Canal, completed in 1825, there were few important projects in operation before 1820-1825, and almost no new projects were undertaken after 1850. Their success was wholly in freight service and almost entirely in the handling of low-grade freight, such as coal, iron-ore, lime, sand, and the like.

To the canal administration, whether public or private, was given the privilege of levying a toll, and individuals and companies were free to operate their boats on the canal upon payment of the prescribed toll. The tolls were imposed upon the commodities carried and were paid by the boatmen, who included them in their transportation rates. The functions of highway owner and common carrier (represented on the one hand by the toll for the use of the highway and, on the other, by the charge for carriage) were distinct and separate, as in the case of the turnpike, but the toll was levied by the canal company upon commodities in proportion to distance carried, so much per ton per mile, for example, whereas the turnpike company levied its toll upon the vehicle, having in mind the relation of the vehicle to the wear and tear on the road.

The Coming of the Railroad

The year 1830 ushered in the era of modern railroad transportation, which was greeted with much opposition. For example, New York forbade the transport of freight by rail between Albany and Buffalo, and later, as these restrictions were removed, it imposed canal tolls upon all railroads paralleling the Erie Canal. But economic demand rapidly swept the remonstrances aside, for the new transportation agency quickly demonstrated its superiority.

Yet the public did not at the beginning foresee clearly the monopolistic tendency inherent in the new agency. It was considered merely as a more efficient highway upon which any one could operate cars, who paid the toll demanded. Most of the early railroad charters recognized this division of function which had become familiar in turnpike and canal practice. It was soon found impracticable, however, from the operating standpoint, and the railroad companies took over the common carrier function.

The First Transcontinental System

Beginning as local projects financed by the community served, and often designed to connect existing transportation agencies, like waterways, the railroad soon outgrew these narrow conceptions and pushed rapidly westward, opening up new country to settlement and conveying the products of the pioneer to the eastern markets. By 1850 or shortly thereafter, Buffalo, Pittsburgh, and Wheeling were in touch with the Atlantic seaboard by rail. Before 1855, Chicago had been reached and a line had been pushed out across Illinois to the Mississippi. When the Civil War broke out, rail lines were advancing through Illinois and Wisconsin into the Northwest and across the state of Missouri to the Missouri River. The year 1869 is notable in railroad history, for on May 10 of that year Governor Leland Stanford of California drove the golden spike that joined the ends of the Central Pacific and Union Pacific railroads, and thus for the first time connected the Atlantic and the Pacific by rail. Since then the task has been one of filling in the gaps, supplying new facilities where needed, and improving and extending roads already constructed. Economic demand has been the principal factor in determining the location and extent of new construction, although speculative activity has played its part. In the decade 1880-1890, there were built over 70,000 miles of railroad, nearly 13,000 miles being laid in 1887. The total mileage is now about 260,000 miles, of which only 30 per cent has been constructed since 1900.

State and Federal Aid

Aid had been granted generously by the people of the country in their eagerness to obtain speedily the facilities they required. Attempts to enlist the federal government in large part failed because of the prevailing strict interpretation of the Constitution, under which it was held that the federal government had no power to control expenditures for internal improvements within the limits of the individual states. Therefore, federal aid took the form of loans and gifts to the states to be used by them for the promotion of internal improvements.

This policy, pursued without caution during President Jackson's administration and followed by the panic of 1837, resulted disastrously. Many states in wild enthusiasm undertook projects far beyond any economic need, and became involved in financial obligations from which they extricated themselves only at great sacrifice. It is not surprising, therefore, to find the states about 1850 passing constitutional amendments prohibiting the loaning of their capital or prohibiting the state from engaging as stockholder in private enterprises. From that time on internal improvement was largely undertaken by private companies chartered by the state. State aid was still generously granted, but principally in the form of land which had been turned over to the states by the federal government for the purpose. Local aid frequently took the form of cash subsidies.

Results of Land Grant Policy

Much criticism of this land subsidy policy has been uttered from time to time, it being urged that the federal government improvidently squandered its birthright in reckless gifts to private corporations. Most criticisms, however, do not take into account the conditions under which the grants were originally made.

The railroads were essential to the settlement of this country, and they would not have been built unaided through an unoccupied territory. The government retained each alternate section and its. policy was to double the selling price of these holdings, thus planning to receive approximately as much for its total holdings as it had expected to receive before the grant was made. In the case of the agricultural lands, it is fallacious, of course, to consider that the government lost or the railroad companies gained the values which the lands represent to-day.

The values of to-day have been created by occupation and development, which could not take place until the lands had passed out of the hands of the government and the companies. There never was a better illustration of inability both to eat one's cake and have it too. The government was seeking to get the lands into the hands of settlers, and the railroads were interested in accomplishing the same thing, for they wanted traffic. The government sold its remaining lands promptly, and the railroads did the same, selling them at low prices, upon easy payments and at low interest rates. The purpose of the grants, therefore, was accomplished.

The only railroad lands not promptly disposed of were in the arid regions, where they were of little value, except where oil or minerals have been discovered upon them. Such values were unknown when the grants were made, and cannot be properly made the basis of criticism of the land grant policy; nor do they have any relevancy to the general regulation of railroad business.

Another feature of the land grant policy was the requirement that all roads receiving grants were required to enter into contracts to carry the mails and government troops, employees, and supplies at charges below the regularly scheduled rates. The effect of these contracts has been to create an indefinite liability on account of which the railroad companies are continually making payments.

The Illinois Central Grant

One of the most important and most frequently mentioned of the grants was that of 2,500,000 acres of land in Illinois, made in 1850 to the Illinois Central Railroad Company. In explaining the bill for this grant in the United States Senate, Senator Stephen A. Douglas, according to the Congressional Record, said:

> "It is simply carrying out a principle which has been acted upon for 30 years, by which you cede each alternate section of land and double the price of the alternate sections not ceded, so that the same price is received for the whole. These lands have been in the market for 15 to 30 years; the average time is about 23 years; but they will not sell at the usual price of $1.25 per acre, because they are distant from any navigable stream or a market for produce. A railroad will make the lands salable at double the usual price, because the improvement made will make them valuable."

Senators Henry Clay, of Kentucky, and Thomas A. Benton, of Missouri, made brief statements supporting Senator Douglas, and the measure passed practically without opposition.

If the lands had been bought by the railroad company in the open market, as they might readily have been before the grant was made, they would have cost the railroads $3,125,000. In consideration of the grant by the government, however, the company entered into a contract to pay into the state treasury of Illinois 7 per cent of its gross earnings, in lieu of general state taxes. In addition to this the company agreed to make certain concessions to the federal government on transportation charges. Calculating for the excess of the gross earnings tax over regular state taxes, the officers of the Illinois Central Railroad Company in 1915 made the following statement of the cost of the grant to the company:

Excess state tax on operating revenues	$16,499,995
Mail pay deductions	1,569,292
Freight deductions	448,327
Deductions for carrying troops, munitions, etc.	2,630,643
	$21,148,257

The Burlington Grant

A more typical example is that of the Chicago, Burlington, & Quincy Railroad, which received a grant of 385,424 acres of land in Iowa, which it might have bought for $1.25 per acre, but for which it had paid up to October 1, 1916, $2,209,000 in deductions from the regular charge for carrying the mails, and these deductions will go on forever unless the law is changed.

V

Railroad Coöperation

It has already been noted that railroads were in the beginning only local projects. None of them had any vision as to what the future of a great railroad system was to be. Even when building had reached the Middle West, connection with the Atlantic seaboard was not made by one single company, but by the connection, end to end, of a number of individual railroads. The New York Central between Albany and Buffalo was at the beginning in the hands of ten different corporations.

The Early Steps

It early became evident that efficiency in service could be accomplished only if the independence of the individual corporations were disregarded so far as operation was concerned. If transfer of passengers and freight at the terminus of every road was required, service would be severely hampered and in many cases made so costly as to be prohibitive. The first steps to remove this obstacle were taken shortly after 1850 by independent fast-freight lines which assumed the function of common carriers. They owned their own equipment, solicited freight, collected the charges, and paid the railroad companies a toll per car for the privilege of having the cars hauled over their lines. The cars passed from point of origin to destination without the transfer of freight.

The later developments of this coöperative movement took various forms in which the railroad corporation itself assumed an increasing part. In some cases the railroads contributed cars to a freight line whose stock they owned; in later times, the fast-freight line became merely a trade-name for a traffic agency under the administration of an individual railroad corporation. As the lines under a single corporation were further extended by the merging of the short lines with the larger systems, and as more efficient methods of interchanging cars and through billing were devised, the fast-freight line ceased to have any economic function.

Types of Outside Agencies

This method of organization, under which an outside agency operates over various railroad systems, still survives in the institutions of the express company, the Pullman Company, and the private car lines. While the contractual relations with the railroads and the legal relations with the public are different in each case, yet all three agencies have arisen because of the disinclination or the inability of the railroads to furnish specialized types of service demanded by the public. It is quite consistent with the development noted in the case of the fast-freight lines, that certain railroads which have extended their mileage and developed a more intense traffic, are now owning and operating their own sleeping cars. So powerful did the private car companies become in certain industries, notably those furnishing refrigerator equipment, that they were able to dictate to the railroad corporations and to demand special rates and favorable contracts not accorded to their less favorably situated competitors. However, in 1906, when the Interstate Commerce Act was amended, these contracts with the railroads were made subject to federal supervision.

Agreements and Pools

With the growth of extended lines of railroads paralleling one another and reaching from the ports and markets of the East into the producing regions of the Middle West, competition began between the different lines, —the Grand Trunk, the New York Central, the Erie, the Pennsylvania, the Baltimore & Ohio—and this competition was intensified by the backing of the port cities which were served by the various roads. So intense became this struggle that bankruptcy faced the roads if some means of relief had not been quickly found.

At first, attempts to do away with competition took the form of "gentlemen's agreements" in which the chief executives of the roads solemnly promised to maintain the published rates. But the pressure brought to bear upon traffic managers was too great to be resisted, and the rumor that some one of the roads had violated its contract was sufficient without further verification to convert the treaty into a mere "scrap of paper."

Something more drastic was needed, particularly for the purpose of keeping in line the weak, badly constructed, badly financed, or roundabout road,—the road which could obtain no business unless it offered a concession in rates. Out of this situation grew the *pool.* This took various forms, of which the two principal ones were the *traffic pool* and the *money* or *income pool.*

Under the terms of a traffic pool, the competitive traffic was divided according to agreed percentages, and a road carrying more than its allotted proportion was expected to divert enough traffic to roads that were short to restore the balance. But member roads were disinclined to divert freight that came to them and shippers and consignees demanded the right to route their own freight. It became necessary to employ "eveners" to solve this difficulty. These were large shippers who agreed to ship their output over any designated line as a means of maintaining the percentage allotment. Their pay was a concession in the rate, which tended to create large monopolies that in time became masters of the situation.

The Money Pool

The *money pool* was a form of contract under which the net earnings were distributed upon a percentage basis, the contract prescribing the proportion that each road might retain for operating expenses, and permitting the roads to handle all the traffic they could secure. This system had the advantage of eliminating the objections to the traffic pool on the part of both shipper and carrier; it also made possible the inclusion of all kinds of commodities and of passenger traffic as well, instead of requiring specific agreements for each type of traffic. For here the roads were concerned with earnings only.

The success of the pools varied with the personality and authority of the manager. Reduced to their lowest terms, they were merely agreements to subsidize weak lines by gifts of traffic or earnings, and even with the subsidy it took a strong administrator to keep the undisciplined members from running amuck.

Whatever benefits the pools may have accomplished in doing away with cutthroat competition and in stabilizing business, they were unable to impress the public with their beneficence and were looked upon as monopolistic agreements to raise rates and exploit the community. They received their death-blow in the Interstate Commerce Act in 1887, which forbade all agreements between competing roads to divide traffic or earnings. It should be noted, however, that, since the Interstate Commerce Commission was established, it has repeatedly recommended to the Congress that parallel roads be permitted to pool, under the jurisdiction of the Commission. But the fear of monopoly was for a long time too deeply ingrained to bring about a change. However, when the Transportation Act of 1920 was passed, which dealt with the return of the roads to private hands after government war operation, the provision was inserted for which the Commission had long contended and pooling is now permissible.

The Traffic Associations

The earlier pools were superseded by *traffic associations* in which roads that ran parallel agreed, under heavy penalty, to maintain rates. They also in some cases authorized their managers to distribute traffic among the roads so far as it could be legally done, for the purpose of keeping the peace and thus helping to maintain the agreements. The roads had passed out of the pioneer stage and it appeared probable that agreements would be more faithfully observed than in the early period. But the Anti-Trust Act was invoked and made applicable to the railroads by interpretation of the Supreme Court, and the Trans-Missouri Freight Association and the Joint Traffic Association were dissolved in 1897 and 1898, because they were combinations in restraint of interstate commerce.

From this date until 1920, no legal method of coöperation was open to parallel and competing railroads, except that of consolidation. This lent stimulus to the consolidation movement, which we shall next consider, although other influences played their part, such as the speculative spirit of the later nineties and the opportunities for profits that were open to the promoters.

The Consolidation Movement

As is noted elsewhere, the early consolidations were "longitudinal" in character and were carried out between connecting roads so as to make long-distance transportation more efficient by doing away with the obstacle of frequent junction points. Following the panic of 1893, when the combination movement throughout industry became an epidemic, railroad consolidations took place on a large scale. Some were clearly in the public interest, as, for example, the purchase by the New York Central of the Lake Shore and the Michigan Central railroads and the eventual amalgamation of the first two into the New York Central Railroad.

The cause of the consolidations and reorganizations generally has been the desire to eliminate destructive competition that drained net revenue and gave the public no corresponding advantage. In many cases, consolidation of railroad properties has resulted in an actual increase in net revenue as a consequence of economies introduced. Notable examples of the rehabilitation of bankrupt systems by the expenditure of large sums of new money upon them, and of large profits made thereby, were to be seen in the development of the Union Pacific and Atchison systems, about twenty years ago.

In many instances, however, the results have not been so fortunate from the standpoint of corporation, stockholders, or the public. In some cases the promoter of an enterprise has lacked foresight or judgment, has been over optimistic as to the success of his enterprise, and has indulged in financing that proved to be reckless and disastrous, causing heavy losses to the investing public. In still other instances, few in number but unfortunately serious in their influence upon public opinion, promoters have been actuated by selfish, speculative motives and have profited for themselves at the expense of innocent investors. These instances, mostly from the past, do not justify sweeping denunciation of railroad management or private ownership, however, and should not unduly influence the public in the determination of policies for the future.

VI

Recent Tendencies in Capitalization

There have been many problems in connection with the railroads, but few have caused wider discussion than those associated with security issues. Many evils in corporate management and many of the difficulties that have arisen with the public are traceable to "overcapitalization" or "stock watering," and the railroads have not been free from this practice. Accurate judgment can be formed, however, only with a complete realization of all that was involved.

Bonus Stock Issues

There was "water" in the early stock issues, particularly in the Western States, where the roads were built through unpopulated regions for the purpose of making them available for settlement. If there had been no "water" or other opportunity for profit above 6 per cent interest, the roads certainly would not have been built as soon as they were built, nor the country developed so early. The stocks that were given to promote the sale of bonds, and as compensation to the organizers of railroad enterprises, were often as truly a part of the consideration for the capital actually invested as were the bonds. They were in the nature of a deferred and contingent reward and were not a burden to the enterprise in its early days because dividends were not then being paid on them. They stimulated railroad construction and the consequent development. For this reason the issue of bonus stocks, like the gift of public lands and other public donations, was not at the time considered contrary to public policy.

Many charges have been made against the railroads on account of these bonus stock issues, however, and finally, in 1913, Congress took the view that the volume of outstanding securities could not be accepted as prima facie evidence of the value of the properties, and ordered the Interstate Commerce Commission to undertake a valuation of the railroads. The question involved is the extent to which actual additions to railway properties in later years have built up their value. If their value is now equal to the total volume of securities outstanding, the "water" has been "squeezed out."

It seems clear that the amount of "water" in railroad capitalization has been often exaggerated in current discussion. Probably it will be found that some of the roads are overcapitalized, while others are worth more than their capitalization. The aggregate value has been increased so much in the last twenty years by bona fide investment that the percentage of bonus stock issues to the total has been very much reduced, and preliminary reports indicate that the final results of the Commission's survey will show values approximately equal on the whole to the outstanding capitalization.

Supervision of Accounts

There is ground for some assurance on this point in the fact that since 1907 the Interstate Commerce Commission has had supervision over the accounts of the railroad companies and has prescribed a uniform system of bookkeeping. Under its rules, nothing since 1907 should have been charged on the property accounts that has not represented a corresponding addition to values.

The property accounts of all roads in 1907 showed an aggregate value of approximately $13,000,000,000, and on December 31, 1919, the total was approximately $20,000,000,000, an increase of about $7,000,000,000 in twelve years. This is an increase of more than one-half since the Commission assumed authority over the accounts and represents more than one-third of the total investment, according to the railroads' accounts. The increase in mileage in that time has been relatively small, most of the new capital having been expended upon improvements. These figures are sufficient of themselves to show that statements to the effect that railroad capitalization to the extent of one-third or even one-quarter is composed of bonus issues, are widely erroneous.

It has been said that the authority of the Commission over railroad accounts has not prevented the acquisition of new properties, in some instances at unwarranted valuations, by giving new securities in exchange, and it has been urged that to put a stop to such abuses the Commission should have control over security issues. This authority was granted by the Esch-Cummins Law of 1920. Undoubtedly this is sound policy.

The Temporary Valuation

The Interstate Commerce Commission, in its rate decision in August, 1920, guided in part by the preliminary reports of its own Valuation Bureau, fixed the valuation of all the roads tentatively at $18,900,000,000, which compares with $20,040,572,611, the amount shown by the railroads' books.

The latest figures of the Interstate Commerce Commission for the actual capitalization of all roads, as represented by stock and securities outstanding in the hands of the public, are for December 31, 1917, when the amount was $17,107,611,457.

On December 31, 1918, the Commission's figures for the outstanding capitalization of the class 1 roads (those whose earnings exceed $1,000,000 per annum) aggregated $16,082,729,948, of which $7,133,856,663 represented stock and $8,948,873,285 represented bonds.

The significance of over-capitalization in its relation to rates is rapidly lessening, due, for one reason, to the fact that regulating bodies, following the guidance of the Supreme Court, are now determining the reasonableness of the rates by relating the earnings to the value of the property rather than to the outstanding securities.

Statement by Chairman of Commission

The Chairman of the Interstate Commerce Commission, Mr. E. E. Clark, in a statement before a committee of the United States Senate, made the following explanation of the method by which the Commission arrived at the figures given above, for the aggregate value of railroad property:

> "Stocks and bonds were not considered at all. The question of capitalization was not thought of. It is the fair value, as closely as could be estimated and approximated at that time, of the physical property which was devoted to the transportation service. We had a mass of information gathered in our valuation work, which is not in complete form to be given out in the form of reports and findings, and the Transportation Act specifically authorized us to avail ourselves of that information. We availed ourselves of all the information we could. . . .
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> "The principal figures that we used in our value are as of 1913 and 1914. We fixed the price units on a given railroad valuation as of June 30, 1914. Those price units we think were accurate as of that date and a series of years up to that date. If, on a given railroad, we had made our figures on the basis of the valuation established, say, of June 30, 1913, we then computed the value of what the railroad had at that time. All that had been put in since that time, added, has been computed on its cost."

Compensation of Railroad Capital

On the whole it must be considered that the compensation paid for the use of the capital actually employed in railroad service has not been excessive. The average rate of interest upon railroad bonds has been under 5 per cent, and more than one-half of the capitalization has been in bonds. The average rate of dividends paid by the Pennsylvania and New York Central companies, two of the most prosperous, over the last fifty years, has been about 5 per cent. For all railroad stocks, the average of dividends has been much less. If the highest possible estimate of "water" in the capitalization should be accepted and all payments of interest and dividends in the history of the railroads should be calculated against the remaining capitalization, the rate of return would be low as compared with that of ordinary business investments.

Early in this discussion, the proposition was laid down that the transportation business, whether conducted by private agencies or by the government, should be self-supporting, which includes compensation upon the capital employed. This question of compensation has been the chief subject of controversy in the past, and largely because of the doubt in the public mind about the capitalization. But now, with rates and capitalization completely under the control of public authority, there should be general acquiescence in the above principle.

Relation of Stock to Bonds

The question is sometimes asked, Why do railroad companies seldom reduce their indebtedness? The answer is that a moderate amount of long-term indebtedness is not objectionable but advantageous to the public. It enables investors who will accept a comparatively low rate of return under conditions of absolute security to participate in railroad financing, and lowers the cost of railroad operations to the public below what it would be if all the capitalization were represented by stock.

But the amount of debt should not be so large as to make the position of the shareholder precarious, which is the situation that has threatened of late years. When the outstanding stock of a company is changing hands in the open market at less than par, it is obviously impossible for the company to sell new shares at par, and under this condition the companies in recent years have resorted constantly to bonds and short-term notes to provide for their wants. This policy cannot be continued very long without affecting the credit of the roads and the rate of interest they must pay.

Improvements and Operating Expenses

The companies made large expenditures in the period beginning about 1900 to reduce operating expenses. Many roads were practically rebuilt. Grades were lowered, curves straightened, bridges rebuilt, tracks strengthened, motive power and cars replaced, to enable heavier train loads to be handled. These improvements, although they accomplished physical economies in handling traffic, were in notable instances disappointing in the financial returns.

An example may be cited of the Baltimore & Ohio Company, owning one of the oldest and most important railroad systems in the country. Since 1900 it has raised about $300,000,000 by the sale of bonds and $107,000,000 by the sale of common stock at par, all of which was expended in improving the road and increasing its equipment and facilities for handling traffic. One result of this expenditure was shown in the increase of the average train load from 428 tons in 1909 to 777 tons in 1917, or about 81 per cent. But notwithstanding these economies, and although the volume of traffic and gross earnings are larger, the net earnings have not